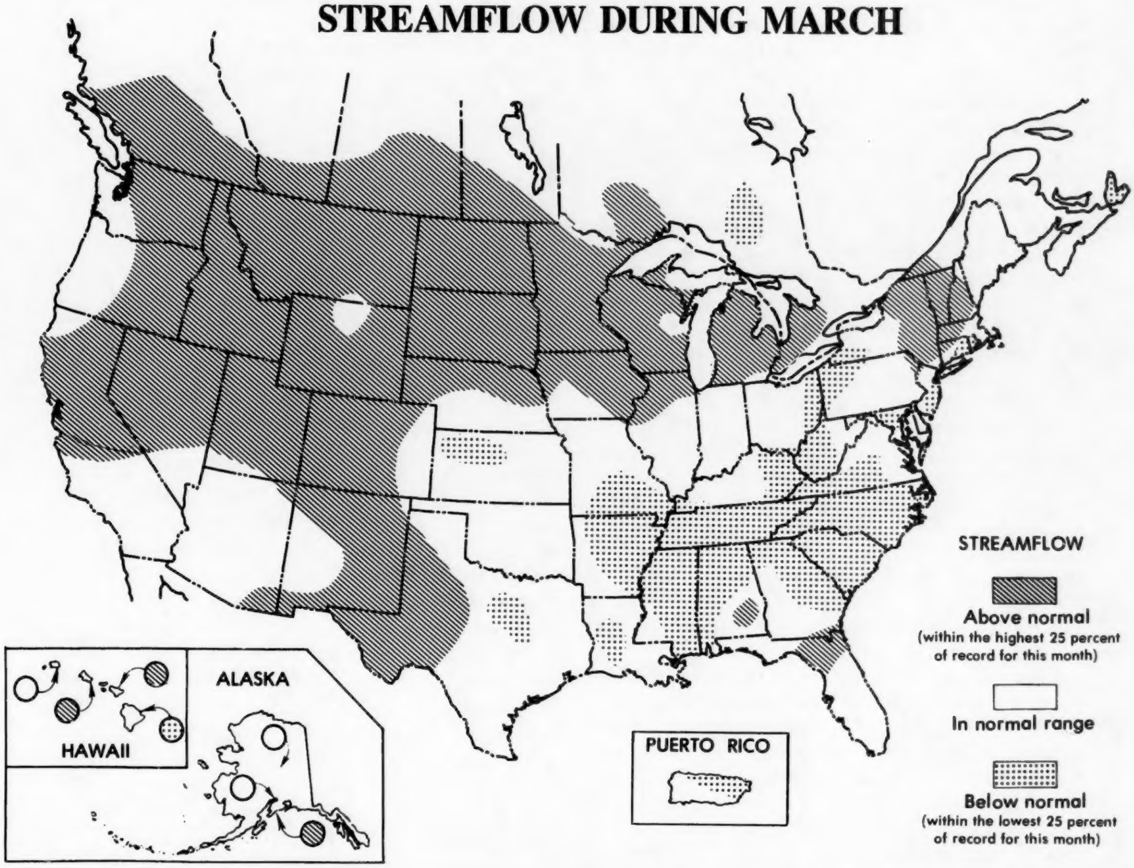
National Water Conditions

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

MARCH 1986

STREAMFLOW DURING MARCH



The Great Salt Lake rose 0.60 foot during the month, reaching an elevation of 4,210.50 feet above mean sea level on March 31, 0.55 foot higher than last year's maximum which occurred on May 21. The National Weather Service predicts a 1986 maximum elevation of 4,211 feet above mean sea level for the lake, given normal spring weather.

Streamflow decreased in Alaska, Puerto Rico, Washington, Nevada, Texas, Louisiana, Arkansas, Missouri, Indiana, Kentucky, West Virginia, Virginia, Rhode Island, New Brunswick, and Ontario; changed variably in Oregon, California, New Mexico, Tennessee, Mississippi, Alabama, Georgia, and Ohio and increased in the rest of the United States and southern Canada. About 77 percent of the index stations had flows in the normal to above-normal range, compared with the 85 percent in those ranges for last month. Dry conditions in the Southeast led to many forest fires, while some parts of Hawaii were under water-use restrictions during March.

Contents of 75 percent of reporting reservoirs were at or above average for the end of March and only two sites with below-average contents reported significant declines, Allard in Quebec and International Amistad in Texas.

The combined flow of the 3 largest rivers in the lower 48 States—Mississippi, St. Lawrence, and Columbia—averaged 1,321,500 cubic feet per second during March, 11 percent above median and 9 percent above last month.

STREAMFLOW CONDITIONS DURING MARCH 1986

Streamflow generally increased in most of the United States and southern Canada: seasonally in Hawaii, Saskatchewan, Quebec, Nova Scotia, the New England States (except Rhode Island), New York, New Jersey, the Carolinas, Michigan, Illinois, Wisconsin, Minnesota, North Dakota, Iowa, Kansas, Oklahoma, Arizona, and also in Wyoming and adjacent States; contraseasonally in British Columbia and Alberta; variably in Florida. Flows generally decreased seasonally in Alaska, Washington, and Ontario; contraseasonally in Nevada, Texas, Missouri, Arkansas, Louisiana, Indiana, Kentucky,West Virginia, Virginia, Maryland, Pennsylvania, Rhode Island, and New Brunswick; variably in Puerto Rioc. Flows changed variably in California, New Mexico, Tennessee, Mississippi, Alabama, and Georgia. About 77 percent of the index stations had flows in the normal to above-normal range, compared with the 85 percent in those ranges for last month.

Below-normal streamflow persisted in parts of Hawaii, Kansas, Louisiana, Mississippi, Alabama, Georgia, Tennessee, the Carolinas, Virginia, and New York. Flows moved into the below-normal range in parts of Puerto Rico, Texas, Missouri, Arkansas, parts of most Southeastern States, and also in parts of Ohio, Pennsylvania, New Jersey, New York, Connecticut, Rhode Island, and Nova Scotia. Record monthly lows occurred at two index stations (see table on page 3) as dry conditions spread through much of the Eastern United States.

Above-normal streamflow persisted in the western Great Lakes States, upper Midwest, most of the West, and parts of Florida, Georgia, and Alaska. Flows moved into the above-normal range in parts of Hawaii, Alabama, New Jersey, Pennsylvania, New York, Connecticut, Massachusetts, Vermont, New Hampshire, most States in the upper Midwest, and most States in the West. Record monthly highs occurred at nine index stations (see table on page 3), all in the West.

Contrasts dominated the month as the Hawaiian islands of Maui, Kauai, and Hawaii experienced water shortages during month of March and some areas had restrictions on water use, but flows increased into the normal to above-normal range on the islands of Maui, Oahu, and Kauai. New daily minimums for March occurred on: East Branch of North Fork Wailua River near Li hue, Kauai (drainage area 6.27 square miles), as the 8.00 cubic feet per second (cfs) minimum was 1.00 cfs less than the previous 74-year low (1970); Honopou Stream near Hue lo, Maui (drainage area 0.64 square mile), as the 0.43 cfs minimum was 0.03 cfs less than the previous 76-year low (1978); Waiakea Stream near Mountain View, Hawaii (drainage area 17.4 square miles), as the 0.06 cfs minimum was 0.13 cfs less than the previous 56-year low (1963).

In Utah, the Great Salt Lake rose 0.6 foot during the month, reaching an elevation of 4,210.50 feet above mean sea level on March 31, 0.55 foot higher than last year's maximum elevation. The National Weather Service predicts a 1986 maximum elevation of 4,211* feet above mean sea level for the lake, given normal spring weather, only 0.6 foot below the compute historical (1847 to date) high of 1873, and 0.1 foot higher than the observed high of June 1876.

Flood stages, as designated by the National Weather Service, were exceeded on many rivers and small streams in California, Nevada, Idaho, Montana, the central third of the Nation, Florida, the Carolinas, Virginia, Maryland, Pennsylvania, New Jersey, New York, Connecticut, Massachusetts, and New Hampshire.

Contents of 75 percent of reporting reservoirs were at or above average for the end of March. Only 4 percent of reporting reservoirs had significant declines in contents during the month. Two reservoirs, Allard in Quebec and International Amistad in Texas, reported both significant declines in contents and below-average contents.

The combined flow of the 3 largest rivers in the lower 48 States—Mississippi, St. Lawrence, and Columbia—averaged 1,321,500 cfs during March, 9 percent above last month, and 11 percent above median. These three large river systems account for runoff from more than half the conterminous United States and provide a useful check on the status of the Nation's surface-water resources.

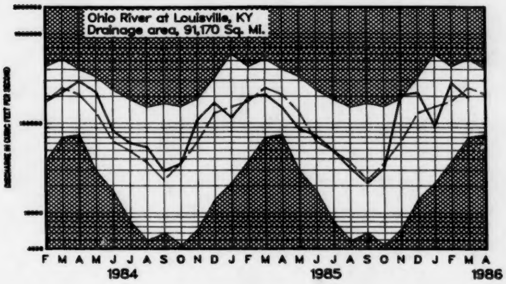
The hydrographs on page 3 show flow conditions at four sites located in or adjacent to the areas of below-normal precipitation shown by the map on page 10. Streamflow conditions for October 1, 1985, through March 31, 1986, are also shown on page 10.

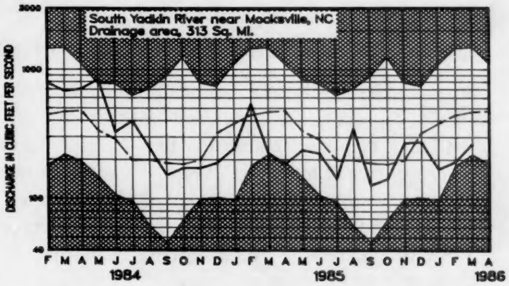
*Editor's note—On April 15, the Great Salt Lake elevation was 4,210.85 feet, and the National Weather Service revised the predicted maximum to 4,211.6 feet.

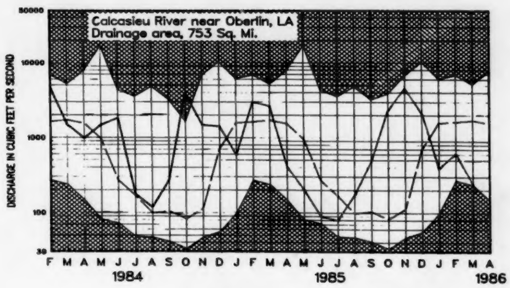
CONTENTS

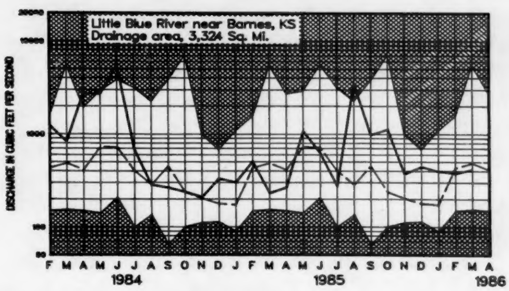
SURFACE WATER — MONTHLY MEAN DISCHARGE IN KEY STREAMS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951-80. Heavy line indicates mean for current period.









NEW EXTREMES DURING MARCH 1986 AT STREAMFLOW INDEX STATIONS

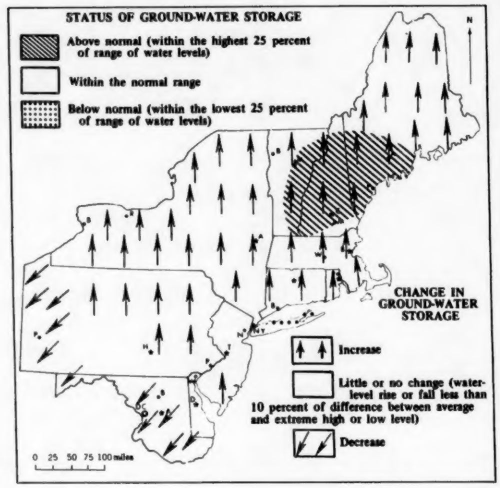
Station number	Stream and place of determination	Drainage area (square miles)	Years of record	Previous March extremes (period of record)		March 1986			
				Monthly mean in cfs (year)	Daily mean in cfs (year)	Monthly mean in cfs	Percent of median	Daily mean in cfs	Day
	HIGH FLOWS								
06191500	Yellowstone River at Corwin Springs, MT.	2,623	80	1,233 (1916)	1,680 (1972)	1,369	147	1,990	31
06630000	North Platte River above Seminoe Reservoir near Sinclair, WY.	8,134	47	884 (1960)	4,800 (1960)	1,105	248	2,700	31
09085000	Roaring Fork River at Glenwood Springs, CO.	1,451	80	669 (1974)	1,260 (1916)	746	186	....	...
09299500	Whiterocks River near Whiterocks, UT.	113	79	59.4 (1985)	80 (1910)	62.6	240	....	...
10296000	West Walker River below Little Walker River, near Coleville, CA.	180	48	203 (1972)	470 (1967)	355	391	1,200	8
11264500	Merced River at Happy Isles Bridge near Yosemite, CA.	181	71	351 (1972)	1,310 (1928)	559	339	1,690	8
12358500	Middle Fork Flathead River near West Glacier, MT.	1,128	47	2,636 (1972)	5,560 (1978)	2,730	414	4,590	30
13037500	Snake River near Heise, ID.	5,752	76	4,850 (1972)	....	5,930	205	11,580	31
13317000	Salmon River at Whitebird, ID.	13,550	74	9,260 (1972)	20,000 (1978)	11,500	227	16,900	9
	LOW FLOWS								
02392000	Etowah River at Canton, GA.	605	59	840 (1981)	533 (1941)	791	41	430	13
02424000	Cahaba River at Centreville, AL.	1,029	59	390 (1904)	390 (1904)	704	21	350	11

GROUND-WATER CONDITIONS DURING MARCH 1986

Ground-water levels rose seasonally in most of the Northeast, especially in northern and central parts of the region. (See map.) Levels declined in western Pennsylvania and most of Maryland. Water levels near the end of the month were above average in parts of Maine, New Hampshire, and Vermont and remained below average on Long Island, New York. Elsewhere in the region, ground-water levels were generally within the normal range of levels that occur at this time of year.

In the Southeastern States, ground-water levels declined in Kentucky and Louisiana, and in most of West Virginia. Water-level trends were mixed in other Southeastern States. Water levels were above average in Kentucky, below average in Arkansas, and mixed with respect to average in other States. A new low water level was recorded in Tennessee in the key well near Memphis.

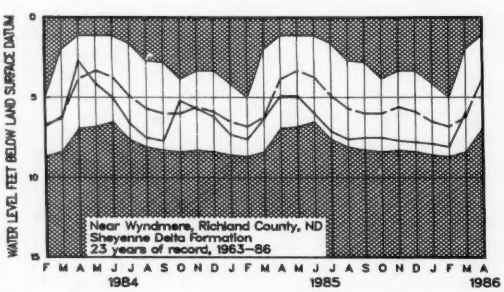
Among the central and western Great Lakes States, ground-water levels rose in Iowa; trends were mixed in other States. Water levels were above average in Michigan, near or above average in Wisconsin, and below average in Ohio. Levels were mixed with respect to average in Minnesota and Iowa. Despite a net decline during the month, a new high ground-water level for March was recorded in Michigan in the key well at Ishpeming in the western part of the northern peninsula.

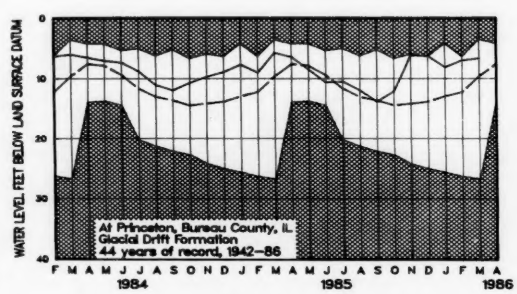


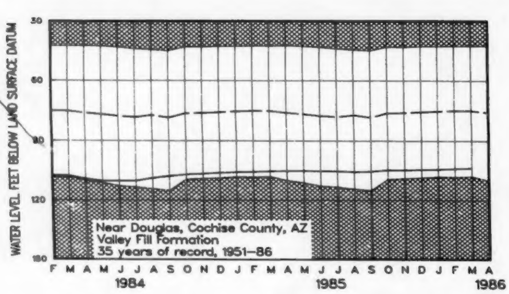
Map showing ground-water storage near end of March and change in ground-water storage from end of February to end of March.

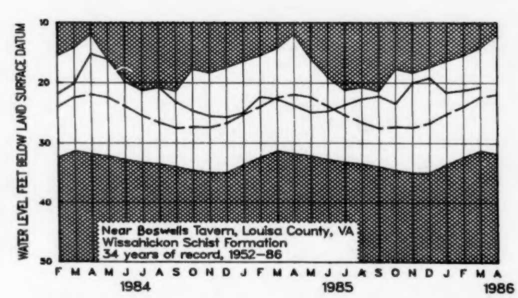
MONTH-END GROUND-WATER LEVELS IN KEY WELLS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates average of monthly levels in previous years. Heavy line indicates level for current period.









WATER LEVELS IN KEY OBSERVATION WELLS IN SOME REPRESENTATIVE AQUIFERS IN THE CONTERMINOUS UNITED STATES—MARCH 1986

Aquifer and Location	Water level in feet with reference to land-surface datum	Departure from average in feet	Net change in water level in feet since:		Year records began	Remarks
			Last month	Last year		
Glacial drift at Hanska, south-central Minnesota.	−4.54	+2.49	+2.28	+0.74	1942	
Glacial drift at Roscommon in north-central part of Lower Peninsula, Michigan.	−3.79	+0.73	+0.54	+0.05	1935	
Glacial drift at Marion, Iowa........................	−1.96	+2.05	+1.94	+0.22	1941	
Glacial drift at Princeton in northwestern Illinois.	−6.75	+2.89	+0.25	−0.95	1943	
Petersburg Granite, southeastern Piedmont near Fall Zone, Colonial Heights, Virginia.	−13.72	−0.58	−0.84	+2.05	1939	
Glacial outwash sand and gravel, Louisville, Kentucky (U.S. well no. 2).	−17.47	+7.88	−0.24	−0.94	1946	
500-foot sand aquifer near Memphis, Tennessee (U.S. well no. 2).	−104.38	−15.69	−0.25	−0.72	1941	March low.
Granite in eastern Piedmont Province, Chapel Hill, North Carolina (U.S. well no. 5).	−41.82	+0.22	+0.14	−1.88	1931	
Sparta Sand in Pine Bluff industrial area, Arkansas.	−218.0	−12.04	−0.15	+6.80	1958	
Eutaw Formation in the City of Montgomery, Alabama (U.S. well no. 4).	−20.7	−2.6	+1.0	−3.2	1952	
Limestone aquifer on Cockspur Island, Savannah area, Georgia (U.S. well no. 6).	−32.58	+7.23	+0.44	+0.07	1956	
Sand and gravel in Puget Trough, Tacoma, Washington.	−100.64	+6.69	+0.34	+7.64	1952	
Pleistocene glacial outwash gravel, North Pole, northern Idaho (U.S. well no. 3).	−462.2	−0.6	−0.3	−3.6	1929	
Snake River Group: Snake River Plain Aquifer, at Eden, Idaho (U.S. well no. 4).	−122.6	−1.4	+1.4	+2.2	1957	
Alluvial valley fill in Flowell area, Millard County, Utah (U.S. well no. 9).	−4.14	+20.40	−0.04	−5.54	1929	
Alluvial sand and gravel, Platte River Valley, Ashland, Nebraska (U.S. well no. 6).	−3.92	+0.67	+1.23	+0.38	1935	
Alluvial Valley fill in Steptoe Valley, Nevada.	−6.87	+5.69	+0.24	+0.75	1950	Alltime high.
Pleistocene terrace deposits in Kansas River valley, at Lawrence, northeastern Kansas.	−18.20	+2.95	−0.80	+0.47	1953	
Alluvium and Paso Robles clay, sand, and gravel, Santa Maria Valley, California	−138.15	+1.29	−10.19	−37.40	1957	
Valley fill, Elfrida area, Douglas, Arizona (U.S. well no. 15).	−104.0	−25.35	+0.3	+1.5	1951	
Hueco bolson, El Paso area, Texas................	−266.0	−17.84	−0.46	−2.39	1965	March low.
Evangeline aquifer, Houston area, Texas.........	−306.52	−11.33	+2.00	−2.04	1965	

In the Western States, ground-water levels rose in Washington, Norht Dakota, and Nebraska. Trends were mixed in other Western States. Water levels were above average in Washington, North Dakota, and Nebraska, and Utah. Levels were below average in Arizona, and mixed with respect to average in other Western States. New high ground-water levels for March were recorded in Idaho and Utah, and new low levels for March were noted in Kansas and Texas. A new all-time high ground-water level was reached in the key well in the Steptoe Valley in Neveda in 36 years of record. Despite a net decline during March, another all-time high level was recorded in the Berrendo-Smith well in New Mexico in 20 years of record. Also in New Mexico, a new all-time low level was reached in the key well at Dayton, in 43 years of record.

USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF MARCH 1986

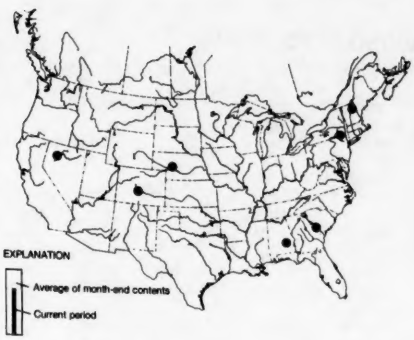
[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

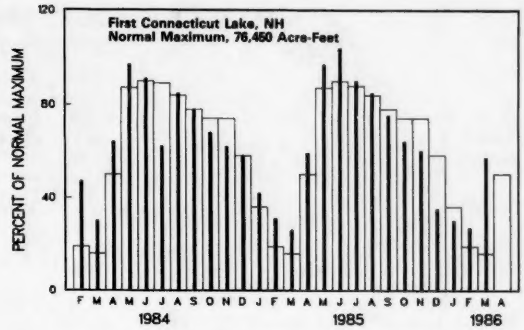
Reservoir Principal uses: F-Flood control I-Irrigation M-Municipal P-Power R-Recreation W-Industrial	Percent of normal maximum: End of Mar. 1986	End of Mar. 1985	Average for end of Mar.	End of Feb. 1986	Normal maximum[a] (acre-feet)
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs(P)	30	38	64	34	[b]226,300
QUEBEC					
Allard (P)	25	24	32	51	280,600
Gouin (P)	52	63	48	57	6,954,000
MAINE					
Seven reservoir systems (MP)	50	31	36	52	4,107,000
NEW HAMPSHIRE					
First Connecticut Lake (P)	57	26	17	27	76,450
Lake Francis (FPR)	27	37	22	31	99,310
Lake Winnipesaukee (PR)	72	67	65	69	165,700
VERMONT					
Harriman (P)	69	51	35	31	116,200
Somerset (P)	62	63	52	50	57,390
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	85	64	78	84	77,920
NEW YORK					
Great Sacandaga Lake (FPR)	67	47	48	39	786,700
Indian Lake (FMP)	89	62	48	68	103,300
New York City reservoir system (MW)	100	59	96	85	1,680,000
NEW JERSEY					
Wanaque (M)	101	55	89	101	85,100
PENNSYLVANIA					
Allegheny (FPR)	40	31	34	30	1,180,000
Pymatuning (FMR)	93	95	94	89	188,000
Raystown Lake (FR)	68	68	57	68	761,900
Lake Wallenpaupack (PR)	62	63	64	55	157,800
MARYLAND					
Baltimore municipal system (M)	82	95	92	78	261,900
NORTH CAROLINA					
Bridgewater (Lake James) (P)	85	86	90	83	288,800
Narrows (Badin Lake) (P)	92	90	100	84	128,900
High Rock Lake (P)	51	49	82	28	234,800
SOUTH CAROLINA					
Lake Murray (P)	89	86	79	83	1,614,000
Lakes Marion and Moultrie (P)	87	81	81	79	1,862,000
SOUTH CAROLINA—GEORGIA					
Clark Hill (FP)	62	71	74	62	1,730,000
GEORGIA					
Burton (PR)	84	72	84	23	104,000
Sinclair (MPR)	86	88	89	87	214,000
Lake Sidney Lanier (FMPR)	52	62	61	51	1,686,000
ALABAMA					
Lake Martin (P)	91	85	89	73	1,375,000
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	49	47	52	42	2,229,300
Douglas Lake (FPR)	32	23	42	22	1,394,000
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	55	55	64	48	1,012,000
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	55	51	56	49	2,880,000
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	48	58	63	38	1,478,000
WISCONSIN					
Chippewa and Flambeau (PR)	48	58	27	49	365,000
Wisconsin River (21 reservoirs) (PR)	39	45	26	38	399,000
MINNESOTA					
Mississippi River headwater system (FMR)	19	21	19	18	1,640,000
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	80	82	82	74	22,700,000
SOUTH DAKOTA					
Angostura (I)	76	80	82	56	127,600
Belle Fourche (I)	52	84	63	37	185,200
Lake Francis Case (FIP)	77	77	81	70	4,834,000
Lake Oahe (FIP)	91	89	...	80	22,530,000
Lake Sharpe (FIP)	101	91	99	101	1,725,000
Lewis and Clark Lake (FIP)	75	72	83	79	477,000

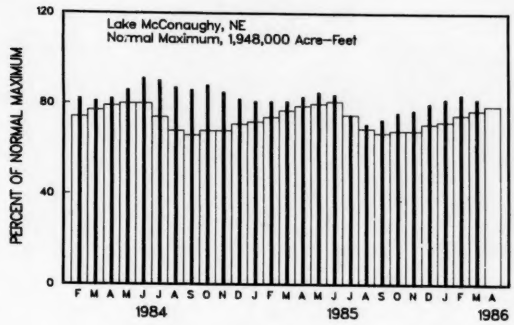
Reservoir Principal uses: F-Flood control I-Irrigation M-Municipal P-Power R-Recreation W-Industrial	Percent of normal maximum: End of Mar. 1986	End of Mar. 1985	Average for end of Mar.	End of Feb. 1986	Normal maximum[a] (acre-feet)
NEBRASKA					
Lake McConaughy (IP)	82	81	77	84	1,948,000
OKLAHOMA					
Eufaula (FRP)	91	113	89	90	2,378,000
Keystone (FPR)	84	107	100	84	661,000
Tenkiller Ferry (FPR)	105	115	94	105	628,200
Lake Altus (FIMR)	24	18	53	26	133,000
Lake O'The Cherokees (FPR)	88	100	88	92	1,492,000
OKLAHOMA—TEXAS					
Lake Texoma (FMPRW)	94	107	89	94	2,722,000
TEXAS					
Bridgeport (IMW)	78	72	47	79	386,400
Canyon (FMR)	97	89	79	98	385,600
International Amistad (FIMPW)	63	66	83	70	3,497,000
International Falcon (FIMPW)	33	43	73	28	2,668,000
Livingston (IMW)	99	104	89	100	1,788,000
Possum Kingdom (IMPRW)	87	97	95	88	570,200
Red Bluff (PI)	21	32	29	24	307,000
Toledo Bend (P)	90	92	87	89	4,472,000
Twin Buttes (FIM)	12	12	31	12	177,800
Lake Kemp (IMW)	91	86	85	92	268,000
Lake Meredith (FWM)	30	34	37	30	796,900
Lake Travis (FIMPRW)	100	99	82	102	1,144,000
MONTANA					
Canyon Ferry (FIMPR)	73	68	75	73	2,043,000
Fort Peck (FPR)	75	83	82	73	18,910,000
Hungry Horse (FIPR)	73	52	59	66	3,451,000
WASHINGTON					
Ross (PR)	52	8	29	46	1,052,000
Franklin D. Roosevelt Lake (IP)	92	19	49	97	5,022,000
Lake Chelan (PR)	45	20	31	35	676,100
Lake Cushman (PR)	95	50	84	80	359,500
Lake Merwin (P)	97	103	98	88	245,600
IDAHO					
Boise River (4 reservoirs) (FIP)	74	64	66	67	1,235,000
Coeur d'Alene Lake (P)	88	48	71	126	238,500
Pend Oreille Lake (FP)	51	37	51	36	1,561,000
IDAHO—WYOMING					
Upper Snake River (8 reservoirs) (MP)	59	69	74	61	4,401,000
WYOMING					
Boysen (FIP)	69	70	64	75	802,000
Buffalo Bill (IP)	70	65	60	65	421,300
Keyhole (F)	33	43	46	29	193,800
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	68	74	52	65	3,056,000
COLORADO					
John Martin (FIR)	87	94	20	92	364,400
Taylor Park (IR)	67	59	55	67	106,200
Colorado-Big Thompson project (I)	74	73	56	74	730,300
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs (IFPR)	84	83	64	86	31,620,000
UTAH—IDAHO					
Bear Lake (IPR)	79	74	60	77	1,421,000
CALIFORNIA					
Folsom (FIP)	64	70	63	*61	1,000,000
Hetch Hetchy (MP)	70	27	28	*61	360,400
Isabella (FIR)	72	40	30	*56	568,100
Pine Flat (FI)	85	58	58	*80	1,001,000
Clair Engle Lake (Lewiston) (P)	88	77	83	*84	2,438,000
Lake Almanor (P)	97	70	55	*86	1,036,000
Lake Berryessa (FIMW)	101	90	90	*102	1,600,000
Millerton Lake (FI)	79	71	67	*93	503,200
Shasta Lake (FIPR)	82	78	84	*87	4,377,000
CALIFORNIA—NEVADA					
Lake Tahoe (IPR)	87	73	56	*84	744,600
NEVADA					
Rye Patch (I)	91	96	69	72	194,300
ARIZONA—NEVADA					
Lake Mead and Lake Mohave (FIMP)	89	91	68	89	27,970,000
ARIZONA					
San Carlos (IP)	97	104	29	94	935,100
Salt and Verde River system (IMPR)	98	97	53	87	2,019,100
NEW MEXICO					
Conchas (FIR)	86	67	79	87	330,100
Elephant Butte and Caballo (FIPR)	96	73	32	95	2,453,000

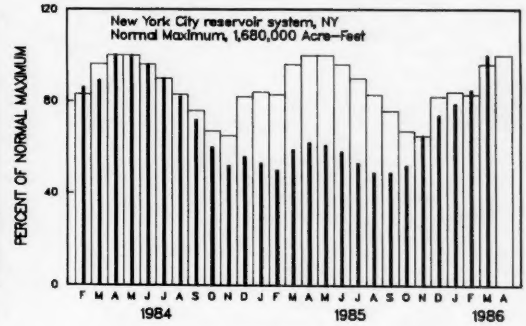
*Corrected figure.
[a]1 acre-foot = 0.04356 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second day.
[b]Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).

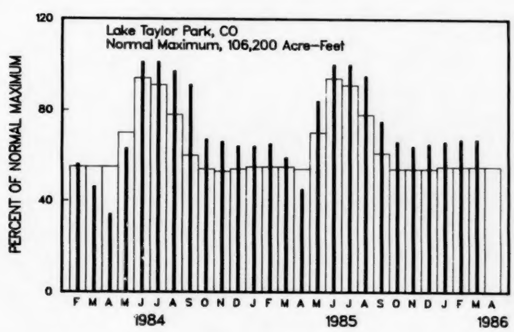
USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS, FEBRUARY 1984 TO MARCH 1986

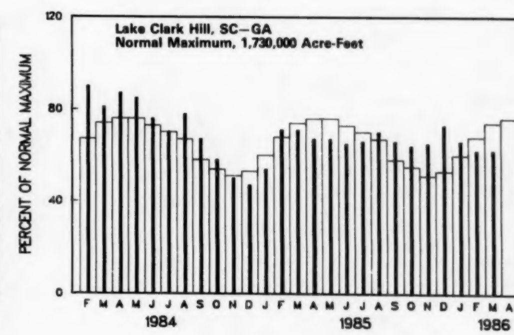


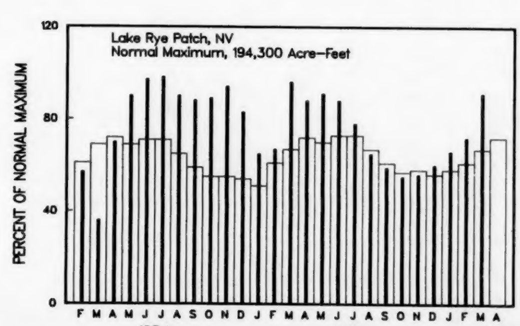


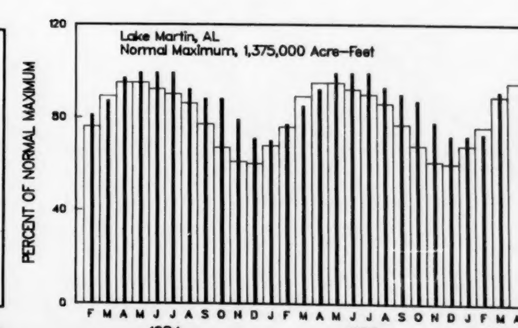












FLOW OF LARGE RIVERS DURING MARCH 1986

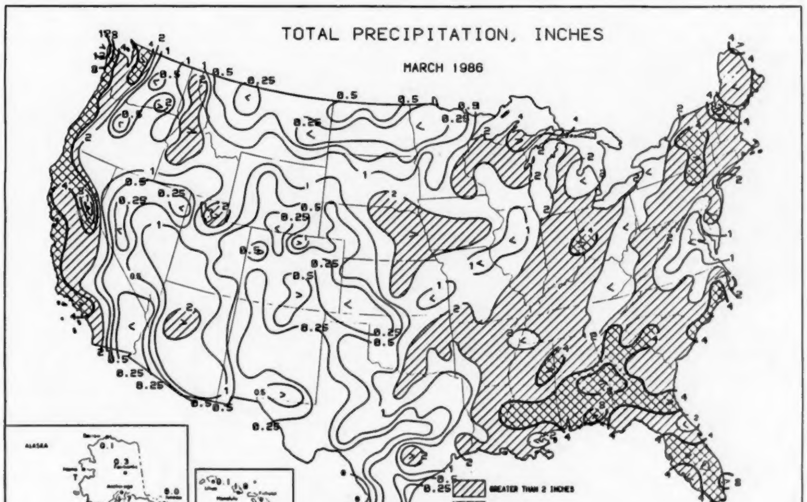
Station number	Stream and place of determination	Drainage area (square miles)	Average discharge through September 1980 (cubic feet per second)	March 1986					
				Monthly mean discharge (cubic feet per second)	Percent of median monthly discharge, 1951–80	Change in discharge from previous month (percent)	Discharge near end of month		
							Cubic feet per second	Million gallons per day	Date
01014000	St. John River below Fish River at Fort Kent, ME.	5,690	9,647	3,716	153	−47	16,000	10,300	31
01318500	Hudson River at Hadley, NY...........	1,664	2,909	5,860	195	+251	19,100	12,340	31
01357500	Mohawk River at Cohoes, NY..........	3,456	5,734	18,600	175	+328	18,000	11,600	31
01463500	Delaware River at Trenton, NJ.........	6,780	11,750	29,610	148	+89	16,700	10,790	31
01570500	Susquehanna River at Harrisburg, PA.	24,100	34,530	94,620	131	+65	46,400	29,990	28
01646500	Potomac River near Washington, DC.	11,560	[1]11,490	[1]26,400	108	+6	10,500	6,790	31
02105500	Cape Fear River at William O. Huske Lock near Tarheel, NC.	4,810	5,005	5,221	52	+73	2,750	1,777	31
02131000	Pee Dee River at Peedee, SC...........	8,830	9,851	8,070	45	+51	14,500	9,370	25
02226000	Altamaha River at Doctortown, GA....	13,600	13,880	13,250	42	−39	18,800	12,150	28
02320500	Suwannee River at Branford, FL.......	7,880	6,987	21,800	194	+4	17,200	11,120	31
02358000	Apalachicola River at Chattahoochee, FL.	17,200	22,570	27,000	66	−5	19,800	12,800	31
02467000	Tombigbee River at Demopolis lock and dam near Coatopa, AL.	15,400	23,300	20,880	44	+23	7,550	4,879	31
02489500	Pearl River near Bogalusa, LA..........	6,630	9,768	9,541	55	+52	13,400	8,660	31
03049500	Allegheny River at Natrona, PA........	11,410	[1]19,480	[1]29,460	73	−34	24,800	16,030	27
03085000	Monongahela River at Braddock, PA..	7,337	[1]12,510	[1]28,440	134	−40	12,200	7,890	27
03193000	Kanawha River at Kanawha Falls, WV.	8,367	12,590	17,650	74	−20	6,830	4,414	25
03234500	Scioto River at Higby, OH...............	5,131	4,547	9,722	100	−24	3,260	2,106	31
03294500	Ohio River at Louisville, KY[2]..........	91,170	116,000	190,900	77	−32	207,200	133,900	23
03377500	Wabash River at Mount Carmel, IL....	28,635	27,220	55,123	96	+13	50,800	32,830	30
03469000	French Broad River below Douglas Dam, TN.	4,543	6,798	6,297	54	+7	.....	.....	...
04084500	Fox River at Rapide Croche Dam, near Wrightstown, WI.[2]	6,150	4,163	5,240	124	+24	9,887	6,390	31
04264331	St. Lawrence River at Cornwall, Ontario-near Massena, NY.[3]	299,000	242,700	301,000	120	+5	310,000	200,000	31
02NG001	St. Maurice River at Grand Mere, PQ.	16,300	25,150	6,690	80	+61	14,500	9,370	27
05082500	Red River of the North at Grand Forks, ND.	30,100	2,551	6,370	342	+246	2,300	1,490	29
05133500	Rainy River at Manitou Rapids, MN...	19,400	11,830	10,500	109	−9	12,800	8,270	31
05330000	Minnesota River near Jordan, MN.....	16,200	3,402	12,580	396	+666	32,900	21,260	27
05331000	Mississippi River at St. Paul, MN......	36,800	[1]10,610	22,980	297	+153	62,500	40,390	31
05365500	Chippewa River at Chippewa Falls, WI.	5,600	5,100	6,411	137	+136	41,450	26,790	31
05407000	Wisconsin River at Muscoda, WI.......	10,300	8,617	11,630	121	+18	.....	.....	...
05446500	Rock River near Joslin, IL..............	9,551	5,873	16,000	173	+69	18,400	11,890	31
05474500	Mississippi River at Keokuk, IA........	119,000	62,620	122,500	146	+84	166,600	107,700	31
06214500	Yellowstone River at Billings, MT.....	11,796	7,038	3,790	122	+42	3,740	2,417	31
06934500	Missouri River at Hermann, MO........	524,200	79,490	84,550	114	−6	79,000	51,100	31
07289000	Mississippi River at Vicksburg, MS[4]...	1,140,500	576,600	760,500	93	−3	921,000	595,300	28
07331000	Washita River near Dickson, OK........	7,202	1,368	1,032	174	+23	825	533	31
08276500	Rio Grande below Taos Junction Bridge, near Taos, NM.	9,730	725	930	163	+9	850	549	31
09315000	Green River at Green River, UT.......	40,600	6,298	7,500	185	+3	.....	.....	...
11425500	Sacramento River at Verona, CA.......	21,257	18,820	64,040	204	+14	52,900	34,190	27
13269000	Snake River at Weiser, ID...............	69,200	18,050	50,210	253	+44	52,420	33,879	28
13317000	Salmon River at White Bird, ID........	13,550	11,250	11,500	227	+80	16,750	10,830	31
13342500	Clearwater River at Spalding, ID.......	9,570	15,480	33,240	260	+91	24,410	15,780	31
14105700	Columbia River at The Dalles, OR[5]....	237,000	[1]193,100	[1]260,000	212	+81	303,800	196,400	30
14191000	Willamette River at Salem, OR.........	7,280	[1]23,510	[1]37,600	116	−53	15,500	10,020	30
15515500	Tanana River at Nenana, AK...........	25,600	23,460	7,397	120	−7	7,300	4,720	31
08MF005	Fraser River at Hope, BC................	83,800	96,290	42,370	132	+51	50,850	32,860	27

[1]Adjusted.
[2]Records furnished by Corps of Engineers.
[3]Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.
[4]Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5]Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

DISSOLVED SOLIDS AND WATER TEMPERATURES, MARCH 1986, AT DOWNSTREAM SITES ON SIX LARGE RIVERS

Station number	Station name	March data of following calendar years	Stream discharge during month: Mean (cfs)	Dissolved-solids concentration[a]: Minimum (mg/L)	Dissolved-solids concentration[a]: Maximum (mg/L)	Dissolved-solids discharge[a] (tons per day): Mean	Dissolved-solids discharge[a] (tons per day): Minimum	Dissolved-solids discharge[a] (tons per day): Maximum	Water temperature[b]: Mean in °C	Water temperature[b]: Minimum, in °C	Water temperature[b]: Maximum, in °C
01463500	Delaware River at Trenton, NJ (Morrisville, PA).	1986	29,610	61	106	5,920	2,300	20,970	5.0	1.5	11.0
		1945—85	20,140	44	136	.....	1,100	98,100	...	0	15.0
		(Extreme yr)	[c]20,040	(1945)	(1980)		(1980)	(1978)			
04264331	St. Lawrence River at Cornwall, Ontario, near Massena, NY (median streamflow at Ogdensburg, NY).	1986	301,000	165	166	134,500	129,900	140,000	1.0	0.5	1.0
		1976—85	270,200	164	170	121,100	94,000	145,000	1.0	0	3.0
		(Extreme yr)	[c]250,000	(1977)	(1979)		(1977)	(1978)			
07289000	Mississippi River at Vicksburg, MS.	1986	760,500	220	257	490,300	381,000	608,000	11.5	8.5	13.5
		1976—85	915,000	166	254	504,700	180,000	803,000	9.5	5.0	14.5
		(Extreme yr)	[c]814,500	(1979)	(1980)		(1981)	(1979)			
03612500	Ohio River at lock and dam 53, near Grand Chain, IL (streamflow station at Metropolis, IL).	1986	268,000	176	220	.....	50,000	243,000	...	4.5	9.0
		1955—85	543,100	128	312	.....	54,000	776,000	...	0.5	14.5
		(Extreme yr)	[c]578,300	(1955, 1964)	(1968)		(1968)	(1979)			
06934500	Missouri River at Hermann, MO (60 miles west of St. Louis, MO).	1986	84,300	281	436	85,300	63,500	137,500	8.5	6.0	13.0
		1976—85	115,690	186	530	93,270	29,300	199,000	7.5	0	15.0
		(Extreme yr)	[c]74,200	(1978)	(1981)		(1977)	(1979, 1984)			
14128910	Columbia River at Warrendale, OR (streamflow station at The Dalles, OR).	1986	279,000	87	136	81,400	46,100	106,800	6.5	4.5	7.5
		1976—85	202,700	87	126	58,200	25,600	114,300	6.0	3.0	8.0
		(Extreme yr)	[c]122,950	(1980)	(1979)		(1980)	(1983)			

[a]Dissolved-solids concentrations, when not analyzed directly, are calculated on basis of measurements of specific conductance.
[b]To convert °C to °F: [(1.8 X °C) + 32] = °F.
[c]Median of monthly values for 30-year reference period, water years 1951—80, for comparison with data for current month.



SUMMARY OF DRYNESS IN EASTERN UNITED STATES

Large areas of the eastern States have experienced significantly less than normal precipitation during the last four months. The deficiency has been most pronounced in the region extending from the southern Plains eastward through the lower Mississippi Valley and the southern Appalachians to the Middle Atlantic Coast. The eastern portion of this region also suffered from long-term dryness in late 1984 and early 1985.

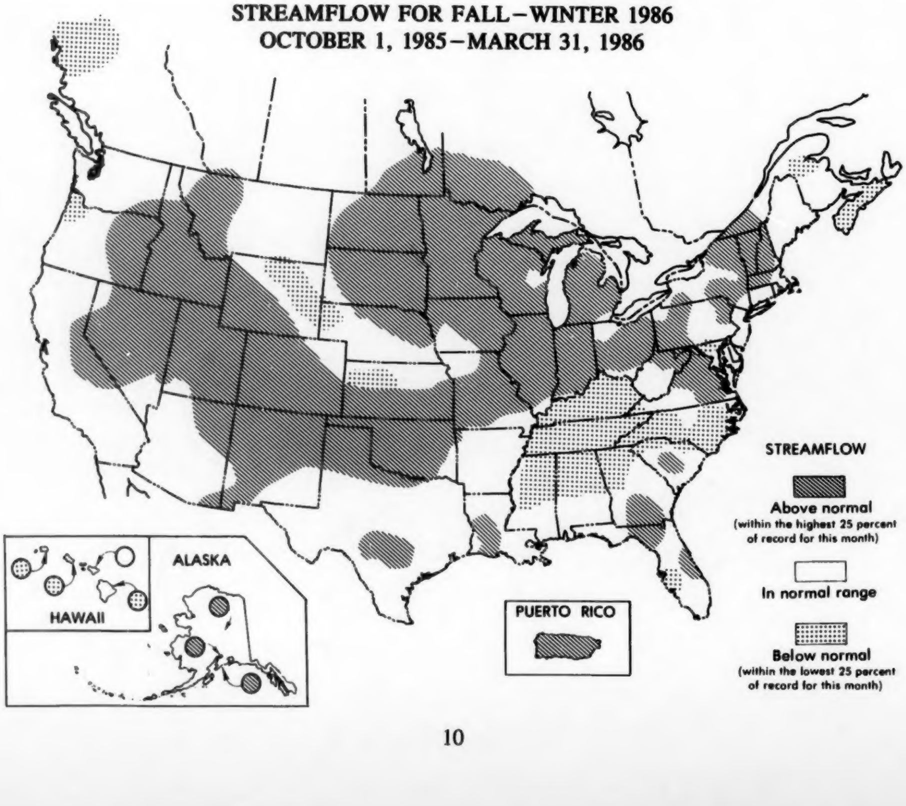
The moisture shortages indicated in the map below are mostly in the top layer of soil and in the expected runoff. Soil moisture accounting during this period indicates that subsoil moisture is adequate in all areas. The map shows areas that reported less than 70 percent of normal precipitation between December 1, 1985, and March 30, 1986.

PERCENT OF NORMAL PRECIPITATION

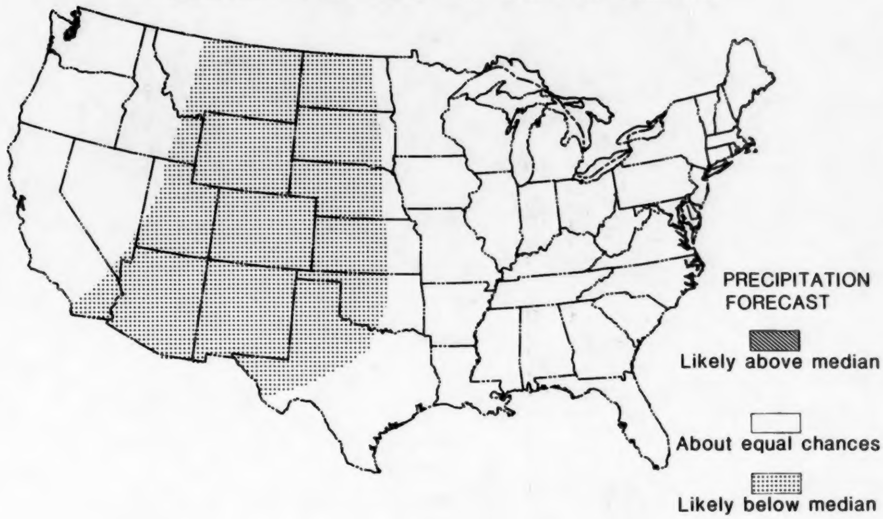
DEC 1985 - MAR 1986 Based ON PRELIMINARY DATA

(From *Weekly Weather and Crop Bulletin* prepared and published by the NOAA/USDA Joint Agricultural Weather Facility)

STREAMFLOW FOR FALL–WINTER 1986
OCTOBER 1, 1985–MARCH 31, 1986



PRECIPITATION FORECAST FOR APRIL TO JUNE 1986



(From Monthly and Seasonal Weather Outlook Published by National Weather Service)

NATIONAL WATER CONDITIONS

March 1986

Based on reports from the Canadian and U.S. Field offices; completed April 18, 1986

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EXPLANATION OF DATA (Revised January 1986)

Cover map shows generalized pattern of streamflow for the month based on provisional data from 184 index gaging stations—18 in Canada, 164 in the United States, and 2 in the Commonwealth of Puerto Rico. Alaska and Hawaii inset maps show streamflow only at the index gaging stations that are located near the point shown by the arrows. Classifications on map are based on comparison of streamflow for the current month at each index station with the flow for the same month in the 30-year reference period, 1951–80. Shorter reference periods are used for one Canadian index station, two Kansas index stations, one New York index station, and the Puerto Rico index stations because of the limited records available.

The comparative data are obtained by ranking the 30 flows for each month of the reference period in order of decreasing magnitude—the highest flow is given a ranking of 1 and the lowest flow is given a ranking of 30. Quartiles (25-percent points) are computed by averaging the 7th and 8th highest flows (upper quartile), 15th and 16th highest flows (middle quartile and median), and the 23rd and 24th highest flows (lower quartile). The upper and lower quartiles set off the highest 25 percent of flows and lowest 25 percent of flows, respectively, for the reference period. The median (middle quartile) is the middle value by definition. For the reference period, 50 percent of the flows are greater than the median, 50 percent are less than the median, 50 percent are between the upper and lower quartiles (in the normal range) 25 percent are greater than the upper quartile (above normal), and 25 percent are less than the lower quartile (below normal). Flow for the current month is then classified as; *above normal* if it is greater than the upper quartile, *in the normal range* if it is between the upper and lower quartiles, and *below normal* if it is less than the lower quartile. Change in flow from the previous month to the current month is classified as *seasonal* if the change is in the same direction as the change in the median. If the change is in the opposite direction of the change in the median, the change is classified as *contraseasonal* (opposite to the seasonal change). For example: at a particular index station, the January median is greater than the December median; if flow for the current January increased from December (the previous month), the increase is seasonal; if flow for the current January decreased from December, the decrease is contraseasonal.

Flood frequency analyses define the relation of flood peak magnitude to probability of occurrence or recurrence interval. *Probability of occurrence* is the chance that a given flood magnitude will be exceeded in any one year. *Recurrence interval* is the reciprocal of probability of occurrence and is the *average* number of years between occurrences. For example, a flood having a probability of occurrence of 0.01 (1 percent) has a recurrence interval of 100 years. *Recurrence intervals imply no regularity of occurrence;* a 100-year flood might be exceeded in consecutive years or it might not be exceeded in a 100-year period.

Statements about *ground-water levels* refer to conditions near the end of the month. The water level in each key observation well is compared with average level for the end of the month determined from the 30-year reference period, 1951-80, or from the entire past record for that well when only limited records are available. Comparative data for ground-water levels are obtained in the same manner as comparative data for streamflow. *Changes in ground-water levels,* unless described otherwise, are from the end of the previous month to the end of the current month.

Dissolved solids and temperature data for March are given for six stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). *Dissolved solids* are minerals dissolved in water and usually consist predominately of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. *Dissloved-solids discharge* represents the total daily amount of dissolved minerals carried by the stream. *Dissolved-solids concentrations* are generally higher during periods of low streamflow, but the highest dissolved-solids *discharges* occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at times of low flow.

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